

**Track Preference:** Earned Value Management

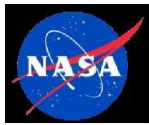
**Presentation Title:** Implementing Earned Value Management in the CxP EVA Systems Project Office

**Synopsis:**

This presentation will cover issues that were overcome and the implementation strategy to deploy Earned Value Management (EVM) within the Constellation Program, EVA Systems Project Office, as well as discuss additional hurdles that currently prevent the organization from optimizing EVM.

**Abstract:**

Earned Value Management (EVM), like project management, is as much art as it is science to develop an implementation plan for a project. This presentation will cover issues that were overcome and the implementation strategy to deploy Earned Value Management (EVM) within the Constellation Program (CxP), EVA Systems Project Office (ESPO), as well as discuss additional hurdles that currently prevent the organization from optimizing EVM. Each organization and each project within an organization needs to mold an EVM implementation plan around existing processes and tools, while at the same time revising those existing processes and tools as necessary to make them compatible with EVM. The ESPO EVM implementation covers work breakdown structure, organizational breakdown structure, control account, work/planning package development; integrated master schedule development using an integrated master plan; incorporating reporting requirements for existing funding process such as Planning, Programming, Budgeting, and Execution (PPBE) and JSC Internal Task Agreements (ITA); and interfacing with other software tools such as the Systems Applications and Products (SAP) accounting system and the CxP WinSight EVM analysis tool. However, there are always areas for improvement and EVM is no exception. As EVM continues to mature within the NASA CxP, these areas will continue to be worked to resolution to provide the Program Managers, Project Managers, and Control Account Managers the best EVM data possible to make informed decisions.



# **Implementing Earned Value Management in the Constellation Program (CxP) EVA Systems Project Office (ESPO)**

**Project Management Challenge 2010  
Galveston, TX  
February 9-10, 2010**

**Les Sorge/SGT, Inc.  
ESPO Project Planning & Control**





# Implementation Goal & Presentation Agenda



- ◆ **The goal of the EVA Systems Project Office (ESPO) Earned Value Management (EVM) implementation is to utilize existing products and processes where possible or *influence* them to make them compatible with EVM**



## Agenda

- Work Breakdown Structure
- Organizational Breakdown Structure
- Responsibility Assignment Matrix and Control Accounts
- Work Packages / Charge Codes and Planning Packages
- Integrated Master Plan
- Integrated Master Schedule – Primavera PM Tool Implementation
- Deltek Cobra Tool Implementation
- Integration / Interfaces to Other Processes / Tools
- EVM Integration with Prime Contractor
- Future Opportunities for Improvements
- Acronyms and Reference Documents
- Questions & Answers



# Work Breakdown Structure (WBS)



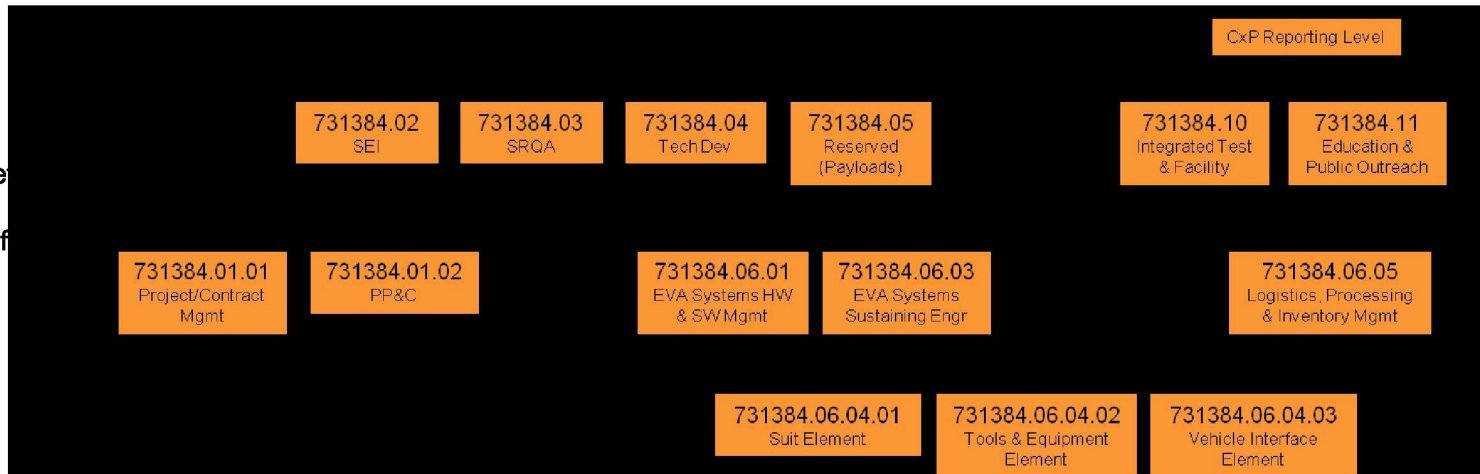
## ◆ Summary of WBS requirements defined in NPR 7120.5D, Appendix G

- The standard space flight project WBS applies to the entire life cycle of the project
- Space flight projects will use the standard Level 1/2 WBS elements with level 1 as the Project name
- Level 3 and lower WBS elements will be determined by the project
- If there is no work to fit into a Level 1/2 WBS element, then an inactive placeholder element will be established
- A single WBS will be used for both technical / business management and reporting

## ◆ ESPO Implementation

- The technical WBS matches the financial WBS excluding the 6 digit project code
- The figure below represents the CxP reporting level and the pre-defined Control Account level

Agency De  
Project Def





# Organizational Breakdown Structure (OBS)

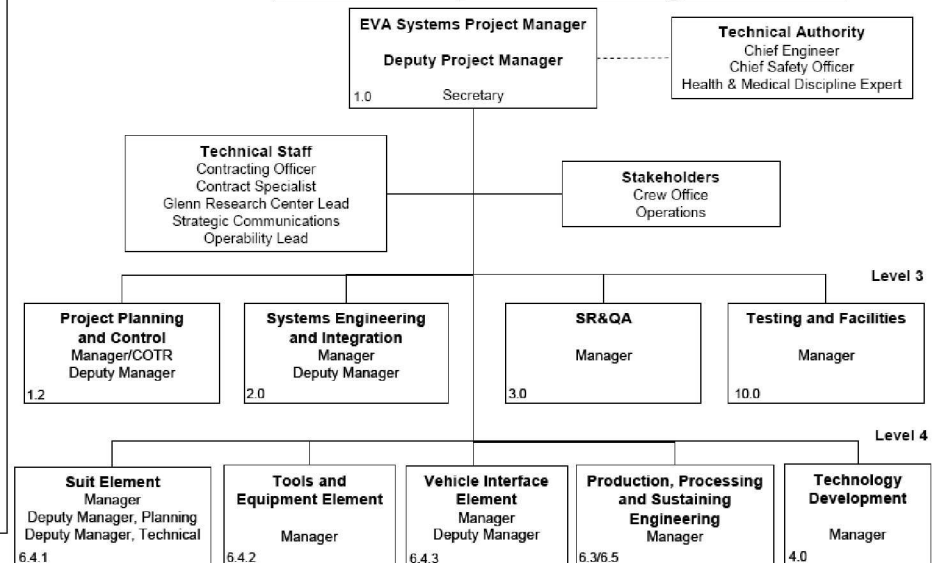


- ◆ **Defining the responsible organization versus the performing organization**
  - Ask the question, “How does the Project Manager distribute the budget for control?”
- ◆ **The Responsible Organization**
  - Used to develop the Responsibility Assignment Matrix (RAM) and Cost Performance Report (CPR) Format 2
  - Aligns closely with the Work Breakdown Structure
- ◆ **The Performing Organization**
  - Based on NASA Center, Directorate, and Divisions
    - A budget forecasting requirement does exist for the performing organization for planning purposes

## NASA Performing Organization

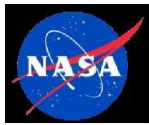
- JSC
  - AA - Office of the Director
  - BA - Office of Procurement
  - CA - Flight Crew Operations Directorate
  - DA - Mission Operations Directorate
  - EA - Engineering Directorate
  - IA - Information Resources Directorate
  - JA - Center Operations Directorate
  - KA - Astromaterials Research and Exploration Science Directorate
  - LA - Chief Financial Officer
  - MA - Space Shuttle Program
  - NA - Safety and Mission Assurance Directorate
  - OA - International Space Station Program Office
  - QA - Commercial Crew & Cargo Program Office
  - RA - White Sands Test Facility
  - SA - Space Life Sciences Directorate
  - W-JS - NASA Office of Inspector General
  - WE - NASA Engineering and Safety Center
  - WR - Department of Defense Payloads Office
  - WS8 - NOAA-National Weather Service, Spaceflight Meteorology Group
  - XA - Extravehicular Activity Office
  - ZA - Constellation Program

## ESPO Responsible Organization





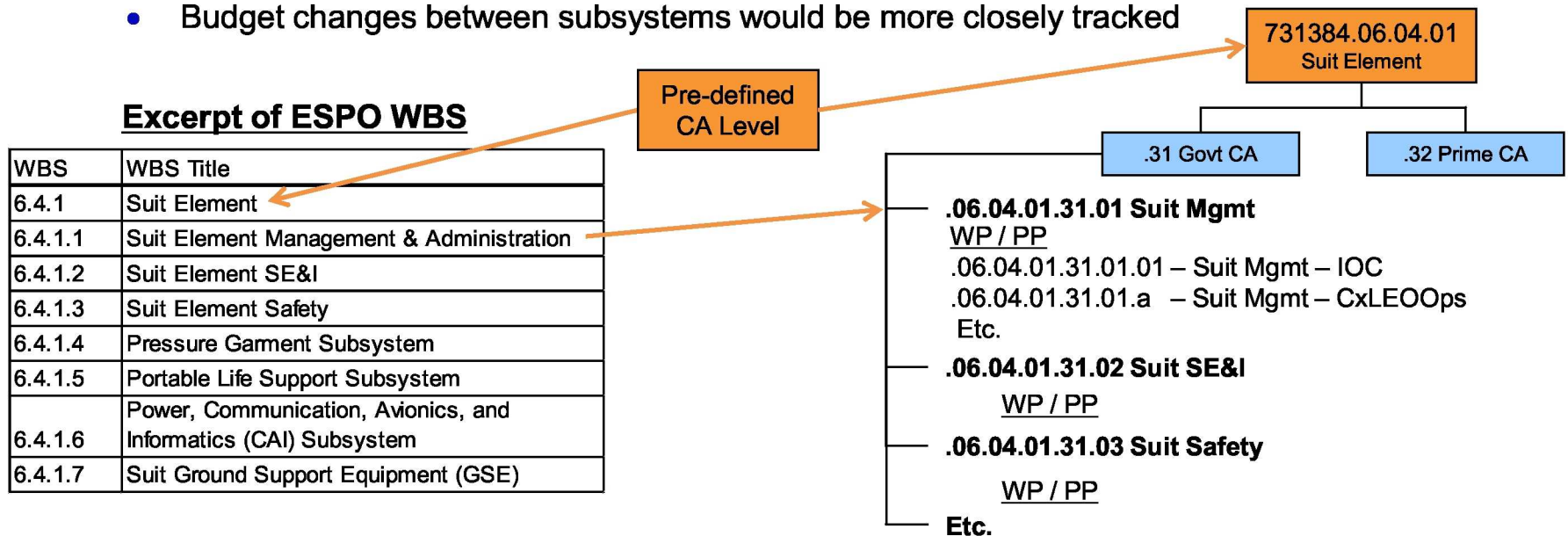




# WBS and CA Levels



- ◆ **Although the WBS expanded to a lower level, the summary level was requested as the control point**
  - Control points/CAMs identified as the ESPO WBS Leads
  - The EVM implementation added “subsystem” summary lines between the Control Accounts and the Work Packages to match the expanded WBS
    - Each subsystem has it’s own unique codes
    - Allows easier summation of performance / costs at the subsystem level
- ◆ **The implementation strategy works, but in hindsight, it may have been better to use the lowest level of the WBS as the Control Account level**
  - CAMs would have multiple Control Accounts
  - Budget changes between subsystems would be more closely tracked





# Work Packages (WP) / Charge Codes & Planning Packages (PP)



## ◆ The financial WBS / charge codes are maintained in SAP financial tool

- Over 400 charge codes previously existed in SAP prior to EVM implementation due to multiple re-builds (most codes never used)
- A “fresh” start was required for EVM
  - Several ideas were explored
  - Preferred option was an easily recognizable unique numbering for the CA
  - All “old” codes collected in the historical CA

## ◆ For CxP ESPO a WP equals a charge code equals the lowest WBS level

## ◆ Adhere to SAP rule that charge codes cannot cross NASA centers

## ◆ PP identified as a letter in the code and are not in the SAP financial tool

- During rolling wave planning, a request for a new charge code will be submitted for the next sequential number to be opened in SAP

### Excerpt of ESPO WP / PP

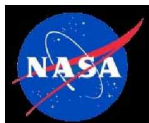
WBS Element Long Title	Project/WBS
Extravehicular Activity	731384
Project Management	731384.01
Project Management	731384.01.01
Project Management and Administration	731384.01.01.01
GRC-Proj Mgt & Admin	731384.01.01.01.03
LaRC-EVA Project Management	731384.01.01.01.04
JSC-EVA-Project Mgmt.	731384.01.01.01.10
Project Management Plan	731384.01.01.02
GRC-Proj Mgmt & Admin	731384.01.01.03
Internal/External Project Review Support	731384.01.01.04
LaRC-Internal/External Proj Review Spt	731384.01.01.04.04
Performance Management and Reviews	731384.01.01.05
JSC-Proj Mgmt & Admin	731384.01.01.10
NASA Project Management	731384.01.01.31
JSC-EVA Project Mgmt - IOC	731384.01.01.31.01
JSC-External Review Supt thru KDP C	731384.01.01.31.02
GRC-EVA Project Mgmt -IOC	731384.01.01.31.03
LaRC-External Review Supt thru KDP C	731384.01.01.31.04
PP - JSC-EVA Project Mgmt - CxLEOOps	731384.01.01.31.a
PP - JSC-EVA Project Mgmt - CxLEOOps -2	731384.01.01.31.aa
PP - JSC-EVA Project Mgmt - HLR	731384.01.01.31.5a
PP - GRC-EVA Project Mgmt - HLR	731384.01.01.31.5b
JSC-CSSS Project Management	731384.01.01.32

731384.01.01.29

Work Packages /  
Charge Codes

Planning  
Packages

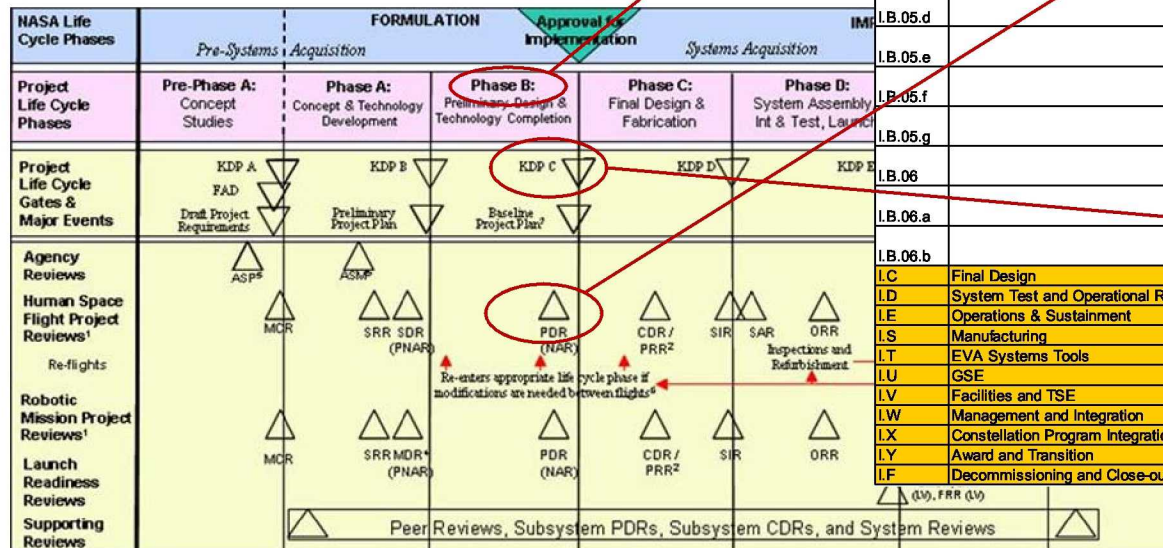




# Integrated Master Plan (IMP)



- ◆ NASA Project life cycle defined in NPR 7120.5D, starting point used to define the ESPO IMP
- ◆ CxP ESPO defined as two separate Projects, Initial Capability and Lunar Capability, that are linked
- ◆ IMP needs to capture all work content of the entire Project
  - IMP events added for work content that is not readily defined by the life cycle phases
  - IMP jointly developed with the Prime



Constellation Program EVA Systems Project Office Lunar Capability Integrated Master Plan			
IMP Code	Event	Significant Accomplishment	Accomplishment Criteria
L	Lunar Capability		
L.A	Requirements Development & System Definition		
L.B	Preliminary Design		
L.C	Final Design		
L.D			
L.E			
L.S			
L.T			
L.U			
L.V			
L.W			
L.X			
L.Y			
L.F			

Constellation Program EVA Systems Project Office Initial Capability Integrated Master Plan			
IMP Code	Event	Significant Accomplishment	Accomplishment Criteria
I	Initial Capability		
I.A	Requirements Development & System Definition		
I.B	Preliminary Design		
I.B.02		VIE PDR	
I.B.04		Suit Element PDR	
I.B.05		EVA Systems PDR	
I.B.05.a			EVA Systems PDR Planning Complete
I.B.05.b			EVA Systems PDR Requirements Analysis Cycle Complete
I.B.05.c			EVA Systems PDR Design Analysis Cycle Complete
I.B.05.d			EVA Systems PDR Hardware Complete
I.B.05.e			EVA Systems PDR Testing Complete
I.B.05.f			EVA Systems PDR Products Complete
I.B.05.g			EVA Systems PDR Execution Complete
I.B.06		Phase B Independent Reviews	
I.B.06.a			EVA Systems PDR SRB Activities Complete
I.B.06.b			Non-advocate Review (NAR) / KDP C Gate Review Complete
I.C	Final Design		
I.D	System Test and Operational Readiness		
I.E	Operations & Sustainment		
I.S	Manufacturing		
I.T	EVA Systems Tools		
I.U	GSE		
I.V	Facilities and TSE		
I.W	Management and Integration		
I.X	Constellation Program Integration		
I.Y	Award and Transition		
I.F	Decommissioning and Close-out		







# Deltek Cobra Tool Implementation

## WBS / OBS / CA Structure



Project - EVA1-GOV  
Status Date: 09/30/2009 Batch No: 277

WBS	Description	BCWS	BCWP	ACWP	BAC	EAC	Status	CA Start Date	CA End Date
731384.01	PM Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.02	NASA Project Management					\$0.00	Open	10/01/2007	09/30/2027
731384.03	PP&C Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.04	NASA PP&C					\$0.00	Open	10/01/2007	09/30/2027
731384.05	SE&I Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.06	NASA SE&I					\$0.00	Open	10/01/2007	09/30/2025
731384.07	SR&QA Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.08	NASA SR&QA					\$0.00	Open	10/01/2007	09/30/2027
731384.09	Tech Dev Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.10	NASA Tech Dev					\$0.00	Open	10/01/2007	09/30/2022
731384.11	Old Charge Codes					\$0.00	Open	10/01/2005	03/31/2008
731384.12	Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.13	NASA EVA Sustaining					\$0.00	Unopen	10/01/2013	03/30/2027
731384.14	Suit Element Old Codes - prior to FY08					\$0.00	Open	10/01/2005	03/31/2008
731384.15	NASA Suit Element					\$0.00	Open	10/01/2007	09/30/2025
731384.16	Tools and Crew Equipment					\$0.00	Open	10/01/2007	09/30/2023

**Control Accounts (CA) match RAM**

WBS	Description	BCWS	BCWP	ACWP	BAC	EAC	Status	WP Start Date	WP Finish Date
731384.01	JSC-PP&C Mgmt - IDC					\$0.00	Open	10/01/2007	03/30/2015
731384.02	PP - JSC-PP&C Mgmt - HLR					\$0.00	Unopen	10/01/2015	12/30/2021
731384.03	PP - JSC-PP&C Mgmt - HLR0ps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.04	PP - JSC-PP&C Mgmt - OutpostDev					\$0.00	Unopen	07/01/2022	06/30/2027
731384.05	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.06	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.07	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.08	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	09/30/2020
731384.09	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2007	03/30/2015
731384.10	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.11	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.12	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.13	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.14	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.15	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.16	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.17	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.18	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.19	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.20	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.21	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.22	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.23	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.24	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.25	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.26	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.27	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.28	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.29	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.30	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.31	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.32	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.33	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.34	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.35	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.36	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.37	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.38	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.39	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.40	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.41	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.42	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.43	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.44	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.45	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.46	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.47	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.48	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.49	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.50	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.51	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.52	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.53	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.54	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.55	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.56	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.57	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.58	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.59	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.60	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.61	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.62	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.63	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.64	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.65	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.66	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.67	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.68	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.69	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.70	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.71	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.72	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.73	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.74	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.75	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.76	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.77	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.78	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.79	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.80	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.81	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.82	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.83	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.84	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.85	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.86	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.87	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.88	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.89	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.90	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.91	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.92	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.93	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.94	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020
731384.95	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	10/01/2015	12/30/2021
731384.96	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2022	12/30/2026
731384.97	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2022	06/30/2027
731384.98	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	07/01/2027	09/30/2027
731384.99	PP - JSC-PP&C Mgmt - OutpostOps					\$0.00	Unopen	04/01/2015	06/30/2020

**Multiple WP make up each CA**

**.00 WBS created to track budget funding marks**

Breakdown Structure - EVA1-WBS

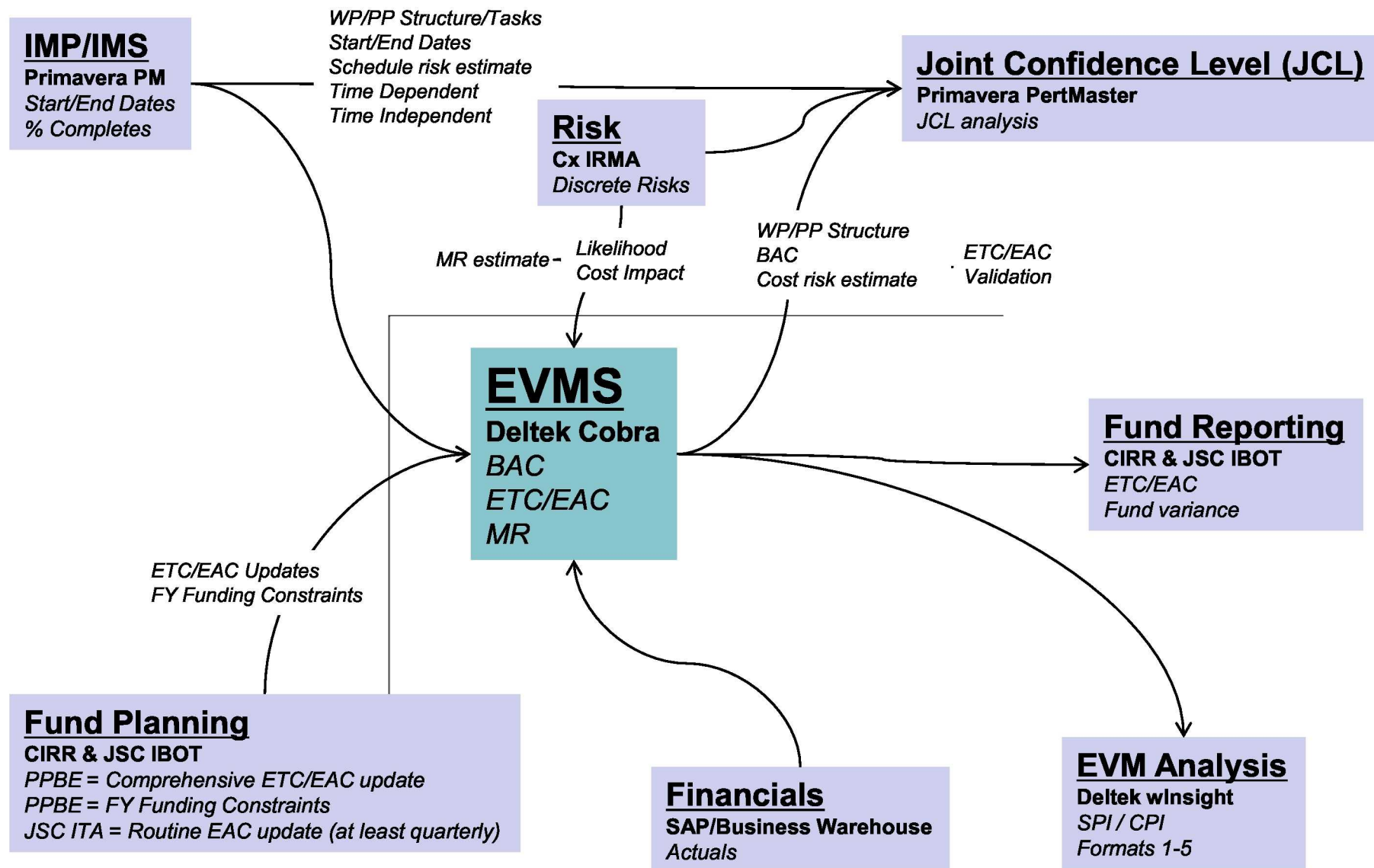
- 731384 EVA Systems Project Office WBS
  - 731384.01 Program Marks
    - 731384.01.01 Project Management
      - 731384.01.02 Project Planning & Control
  - 731384.02 Systems Engineering
  - 731384.03 Safety & Mission Assurance
  - 731384.04 Science/Technology
  - 731384.05 Payloads
  - 731384.06 EVA Systems Hardware / Software
    - 731384.06.01 EVA Systems Hardware Mgt
      - 731384.06.02 Future Use
    - 731384.06.03 EVA Systems Sustaining Engineering
    - 731384.06.04 EVA Hardware Development
      - 731384.06.04.01 Suit Systems
      - 731384.06.04.02 Tools and Crew Equipment
      - 731384.06.04.03 Vehicle Interface Hardware
    - 731384.06.05 Hardware Processing and Logistics
  - 731384.07 Mission Operations
  - 731384.08 Launch Vehicle/Services
  - 731384.09 Ground System(s)
  - 731384.10 Systems Integration & Testing
  - 731384.11 Education and Public Outreach
  - 731384.99 Agency Cost Assessment

Breakdown Structure - EVA1-OBS

- ESPO EVA Systems Project Office OBS
  - HIST-CA Historical Actuals prior to EVM start
  - PM Project/Contract Management
  - PPC Project Planning & Control
  - SEI Systems Engineering & Integration
  - SRQA Safety Reliability and Quality Assurance
  - TECH-DEV Technology Development
  - SUIT Suit Element
  - TOOLS Tools and Equipment Element
  - VIE Vehicle Interface Element
  - T&F Integrated Testing and Facilities
  - OPS&SUSTAIN Operations and Sustaining Engineering



# Integration / Interface with Other Processes / Tools

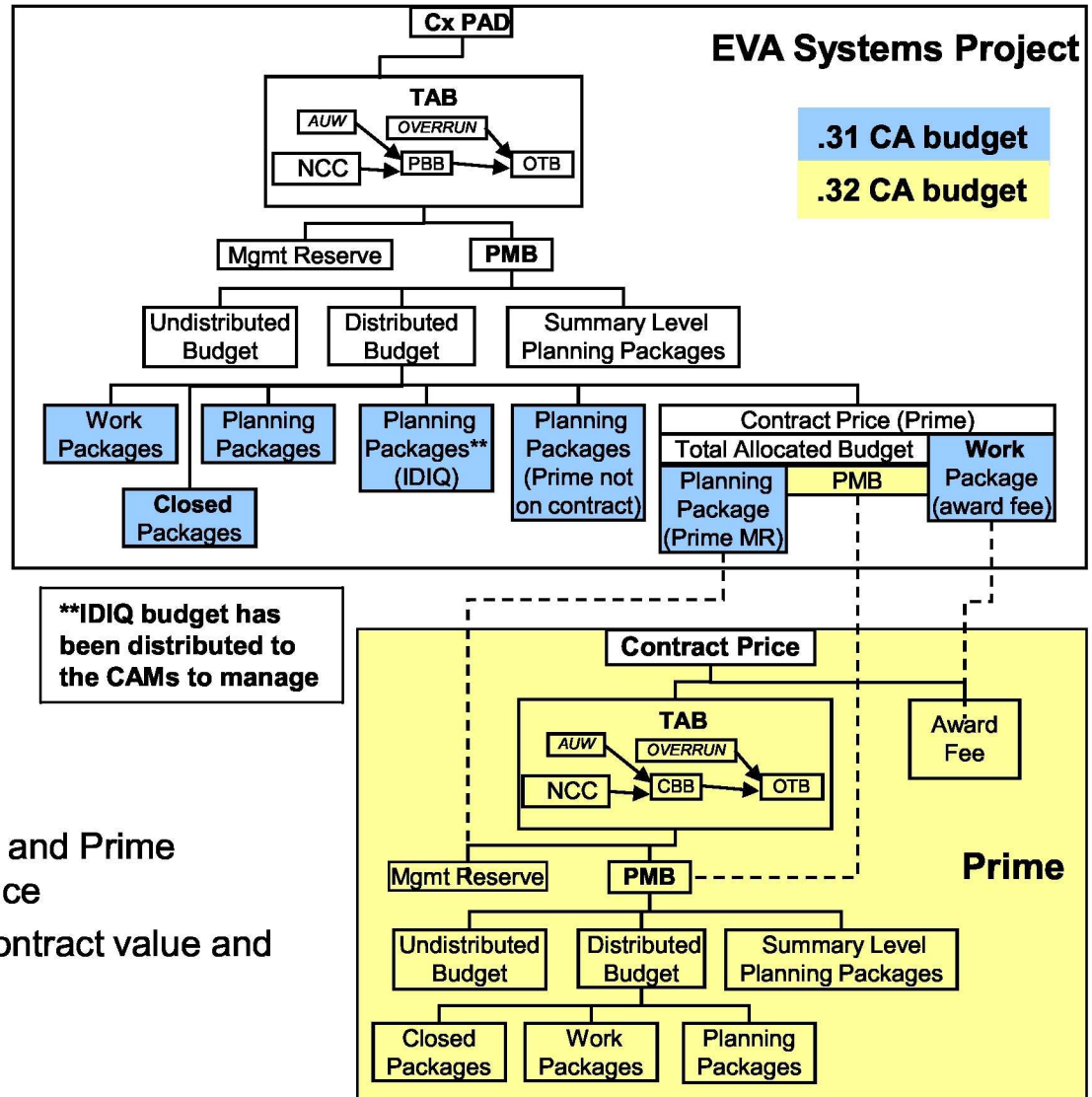




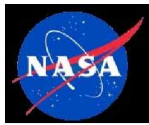
# EVM Integration with Prime Contractor



- ◆ Driving requirement is **NOT** to replicate Prime EVM data within Project data
- ◆ Utilize Deltek wlnsight tool to integrate Prime EVM data with ESPO EVM data
- ◆ Items that must be addressed to integrate data:
  - Management Reserve (MR)
  - Undistributed Budget (UB)
  - Summary Level Planning Packages
  - Prime Award Fee
  - IDIQ content
  - Differences between Cx PAD and Prime contract periods of performance
  - Differences between Prime contract value and Government probable cost







# Future Opportunities for Improvement



## ◆ **NASA financial systems (SAP) not fully compatible with EVM**

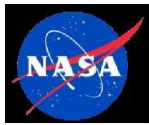
- SAP set up as a cost collection system, not necessarily a performance measurement system
  - Requires obligation of funds at the lowest level of detail, i.e. the charge code for ESPO
  - System cumbersome on Procurement personnel to de-obligate & re-obligate funds from old to new charge codes
  - System sometimes creates situations of lagging actuals due to obligations at the lowest level, i.e. cost over obligations
  - System cumbersome with regards to timely creation and inability to close charge codes and does not limit access to charge codes
  - These issues have forced the creation of long duration work / planning packages (multiple years)

## ◆ **Continued training for understanding of Earned Value concepts, in particular, separation of budget versus funding**

- Existing NASA processes (PPBE, JSC ITA, etc.) are funding processes that are being used synonymously with EVM budget processes
  - They should be linked to EVM funding processes (ETC / EAC)

## ◆ **Not all organization support contracts structured to collect and report data to support Cx Project EVM requirements**

- Contract structure forces organizations to "guess" on the monthly costs collected against charge codes by applying estimates since data reported at a summary level
- Manual entry process of support contract data into SAP precludes detailed data due to the time requirements to enter the data



# Acronyms and Reference Documents



## ◆ Acronyms

- CA – Control Account
- CAM – Control Account Manager
- CIRRR - CxP Integrated Resources Report
- CPR – Cost Performance Report
- CxP – Constellation Program
- ESPO – EVA Systems Project Office
- EVA – Extravehicular Activity
- EVM – Earned Value Management
- EVMS – Earned Value Management System
- IBOT - Integrated Budget Office Toolkit
- IDIQ – Indefinite Delivery, Indefinite Quantity
- IMP – Integrated Master Plan
- IMS – Integrated Master Schedule
- IRMA – Integrated Risk Management Application
- ITA - Internal Task Agreement
- JCL - Joint Confidence Level
- JSC – Johnson Space Center
- NPR - NASA Procedural Requirements
- OBS – Organizational Breakdown Structure
- PAD – Project Authorization Document
- PP – Planning Package
- PPBE - Planning, Programming, Budgeting, and Execution
- RAM – Responsibility Assignment Matrix
- RL – Resource Loaded
- SAP – Systems Application and Products
- WBS – Work Breakdown Structure
- WP – Work Package

## ◆ Reference Documents

- NPR 7120.5D – NASA Program and Project Management Processes and Requirements
- CxP 72179 – CxP ESPO Project Plan
- CxP 72179 Anx01 – CxP ESPO EVM Implementation Plan
- CxP 72179 Anx03 – CxP ESPO IMP/IMS Implementation Plan
- ANSI/EIA-748 – Earned Value Management Systems



---

## Questions & Answers